IN THE CLAIMS

1.   (Currently Amended) An apparatus comprising: ~~An electronic component reliability determination method comprising:~~

one or more processors; and

a memory coupled to the processors comprising instructions executable by the processors, the processors operable when executing the instructions to:

identify a reference failure rate for a monitored device, the reference failure rate being a first quotient of an amount of failures associated with a population of the monitored device and an amount of time, the reference failure rate associated with an expected operating temperature for the monitored device and an expected traffic-based stress ratio for the device;

communicate with the monitored device while the monitored device is in field operation for determining an actual operating temperature for the monitored device and an actual traffic-based stress ratio;

determine a temperature stress adjustment factor using the expected operating temperature and the actual operating temperature;

determine an electrical stress adjustment factor using the expected traffic-based stress ratio and the actual traffic-based stress ratio; and

output an instantaneous failure rate that is a first mathematical product of the reference failure rate, the temperature stress adjustment factor and the electrical stress adjustment factor.

~~executing an initialization process;~~

~~implementing a field condition determination process;~~

~~performing a field condition reliability analysis process for an operational parameter of said electronic component; and~~

~~performing a reliability information management process.~~

2.   (Currently Amended) The apparatus of claim 1 wherein determining the temperature stress adjustment factor further includes determining a difference of a first reciprocal of the expected operating temperature and a second reciprocal of the actual operating temperature. ~~An electronic component reliability determination method of Claim 1 further comprising sensing and tracking initial component startup time after shipping.~~

3.   (Currently Amended) ~~The apparatus of claim 2 wherein the processors are further~~ ~~operable to determine the temperature stress adjustment factor further includes by calculating a~~ ~~second mathematical product of the difference and a second quotient of a predetermined thermal~~ ~~activation energy for the monitored device and Boltzmann's constant~~ ~~An electronic component~~ ~~reliability determination method of Claim 1 further comprising:~~

The apparatus of claim 2 wherein the processors are further operable to determine the temperature stress adjustment factor further includes by calculating a second mathematical product of the difference and a second quotient of a predetermined thermal activation energy for the monitored device and Boltzmann's constant ~~An electronic component reliability determination method of Claim 1 further comprising:~~
~~checking the integrity of non-volatile memory;~~
~~initializing random access memory (RAM) with previously-stored values;~~
~~defining a reliability sampling period or interval; and~~
~~starting background tasks.~~

4.   (Currently Amended) The apparatus of claim 1 wherein the processors are further operable to determine the electrical stress adjustment factor by calculating a difference of the expected traffic-based stress ratio and the actual traffic-based stress ratio. ~~An electronic component reliability determination method of Claim 1 wherein said field condition determination process includes sensing operational parameter information.~~

5.   (Currently Amended) The apparatus of claim 4 wherein the processors are further operable to determine the electrical stress adjustment factor by calculating a second mathematical product of the difference and a predetermined electrical stress characteristic of the monitored device. ~~An electronic component reliability determination method of Claim 4 wherein said operational parameter information includes a temperature measurement associated with a component.~~

6.   (Currently Amended) The apparatus of claim 1 wherein the monitored device is a line card located in a same network device that contains the apparatus. ~~An electronic component reliability determination method of Claim 1 further comprising establishing an interface for presenting reliability information to a user.~~

7.   (Currently Amended) <u>The apparatus of claim 1 wherein the instantaneous failure rate for the monitored device is outputted to a display device.</u> ~~An electronic component reliability determination method of Claim 1 further comprising determining a field condition adjustment factor value and instantaneous failure rate value.~~

8.   (Currently Amended) <u>The apparatus of claim 1 wherein the monitored device is a line card located in a network device and the outputted instantaneous failure rate corresponds to the line card.</u> ~~An electronic component reliability determination method of Claim 7 wherein said instantaneous failure rate value is used to determine reliability of a component.~~

9.   (Currently Amended) <u>The apparatus of claim 8 wherein the processors are further operable to use the instantaneous failure rate for the line card to determine an instantaneous failure rate for the network device.</u> ~~An electronic component reliability determination method of Claim 7 wherein said field condition reliability analysis process includes determination of reliability index values for components and a system.~~

10.   (Currently Amended) <u>The apparatus of claim 1 wherein the processors are further operable to:</u>
    <u>check the integrity of non volatile memory used to store the reference failure rate, the expected operating temperature and the expected traffic-based stress ratio;</u>
    <u>initialize random access memory (RAM) with previously stored values;</u>
    <u>define a reliability sampling period or interval; and</u>
    <u>start background tasks.</u>
    ~~An electronic component reliability determination method of claim 1 further comprising saving parameter information and present value of a reliability indicator.~~

11.   (Currently Amended) <u>The apparatus of claim 1 wherein the monitored device is located remotely with respect to the apparatus and the apparatus is operable to communicate with the monitored device over a network.</u> ~~An electronic reliability determination method of Claim 10 further comprising performing a reliability information condensing process.~~

12.   (Currently Amended)   The apparatus of claim 1 wherein the processors are further operable to communicate with a traffic byte counter coupled to the monitored device to determine the actual traffic-based stress ratio that is a second quotient of a traffic-byte-counter-measured packet processing rate for the monitored device and a theoretical maximum packet processing rate for the monitored device. An electronic reliability determination method of Claim 11 wherein said Reliability information condensing process comprises:

~~saving a reliability-related reference value;~~

~~receiving an updated reliability-related value;~~

~~determining a storage relationship value; and~~

~~saving said storage relationship value.~~

13.   (Currently Amended)   The apparatus of claim 1 wherein the processors are further operable to determine a cumulative reliability indication value by summing the instantaneous failure rate with other instantaneous failure rates for the monitored device that are determined by the apparatus periodically according to a predefined period. ~~An electronic component reliability determination method of Claim 1 wherein said field condition reliability analysis process includes determining a present value of a reliability indicator for a system.~~

14.   (Currently Amended)   A ~~An electronic component reliability determination~~ system comprising:

means for identifying a reference failure rate for a monitored device, the reference failure rate based on expected environmental conditions and expected usage parameters for the device;

means for measuring actual temperature while the device is being operated by a purchaser of the monitored device and actual electrical stress on the monitored device while the device is being operated by a purchaser of the device;

means for comparing the expected environmental conditions and the expected usage parameters to the measured actual temperature and the measured actual electrical stress;

means for determining an instantaneous failure rate by adjusting the reference failure rate according to the comparison; and

means for outputting the determined instantaneous failure rate.

~~a sensor for sensing operational parameter information;~~

~~a bus for communicating information including said operational parameter information;~~

~~a reliability processing component for performing instructions including instructions for ascertaining a field condition adjusted reliability value for an operational parameter of said electronic component; and~~

~~a memory for saving said operational parameter information and said field condition adjusted reliability value.~~

15.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 wherein the actual temperature and the actual electrical stress are measured automatically after passage of a predefined time interval. ~~wherein said sensor includes a diode inside a component and said diode is utilized to establish a temperature measurement indication.~~

16.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 15 wherein the measurements are taken over a predefined duration. ~~14 wherein said sensor includes an ambient temperature measuring device.~~

17.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 further comprising:

means for automatically re-determining the instantaneous failure rate after passage of a predefined time interval; and

means for the identifying a cumulative reliability indication value for the monitored device by summing the initial instantaneous failure rate and the re-determined instantaneous failure rate ~~wherein said sensor includes air intake and air exhaust temperature measuring components.~~

18.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 wherein the expected environmental conditions include expected operating humidity and expected operating ambient temperature. ~~said reliability processing component uses a temperature measurement detected by said sensor to calculate the temperature stress and a reliability adjustment factor.~~

19.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 wherein the expected usage parameters are based on an expected amount of power cycles applied to the monitored device. ~~said reliability processing component performs instructions for calculating an instantaneous failure rate.~~

20.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 wherein the expected temperature is an expected operating temperature. ~~said reliability processing component performs instructions to determine an adjusted instantaneous reliability value.~~

21.   (Currently Amended)   The ~~An electronic component reliability determination~~ system of Claim 14 wherein the expected temperature is an expected ambient temperature. ~~information is stored in said memory component in a reliability information condensing process format.~~

22.   (Currently Amended)   A computer readable medium with instructions embedded therein for causing a processor implement a reliability determination process including:

    an initialization module for directing implementation of an initialization process;

    determination process and a field ~~filed~~ condition reliability analysis process for determining one or more ~~an~~ operational parameters ~~parameter~~ of a component; ~~and~~

    a reliability determination runtime module for interfacing with an operating system[[.]] to calculate one or more field-adjusted Mean Time Between Failures (MTBFs) by adjusting a reference MTBF for the component using the operational parameters and to calculate one or more cumulative reliability index values based on the field-adjusted MTBFs; and

    an output module for causing the calculated cumulative reliability index values to be displayed to a user.

23.   (Currently Amended) A computer readable medium of Claim 22 wherein said initialization module includes instructions for:

checking the integrity of non volatile memory;

initializing random access memory (RAM) with previously stored values;

defining a reliability sampling period or interval; and

a background module for starting background tasks.

24.   (Currently Amended) A computer readable medium of Claim 23 [[22]] wherein said background module includes instructions for implementing reliability associated firmware activities.

25.   (Currently Amended) A computer readable medium of Claim 23 [[22]] wherein said background module divides background tasks into multiple background threads that operate separately.

26.   (Cancelled)

27.   (Currently Amended) A method communication device comprising:

identifying a reference failure rate for a device, the reference failure rate usable for calculating a time between failures statistic associated with the device and based on expected operating parameters for the device;

measuring actual operating parameters for the device while the device is operated for non-testing purposes in a field environment for the device;

determining a custom failure rate by adjusting the reference failure rate that is based on the expected operating parameters and based on the actual operating parameters by the actual operating parameters that are measured while the device is operated for non-testing purposes in the field environment; and

outputting a signal for displaying the custom failure rate.

means for controlling information communication;

means for determining component reliability adjusted in accordance with field condition impacts for an operational parameter of said component; and

means for organizing information associated with said component reliability.

28.   (Currently Amended) The method of claim 27 wherein the measured operating parameters are transferred over a network for remote analysis. A communication device of Claim 27 further comprising a means for ascertaining field condition information.

29.   (Currently Amended) The method of claim 27 wherein the device is a line card located in a network processing element. A communication device of Claim 27 wherein said field condition information includes a temperature measurement.

30.   (Currently Amended) The method of claim 27 wherein the custom failure rate is an instantaneous failure rate for the device measured at a first time and the custom failure rate is summed with other instantaneous failure rates for the device that are measured at second other times to generate a cumulative reliability indication. A communication device of Claim 27 wherein said means for determining component reliability adjusted in accordance with filed condition impacts determines an instantaneous failure rate and a cumulative reliability indication.

31.   (New) The apparatus of claim 1 wherein the processors are further operable to output a field-adjusted Mean Time Between Failures (MTBF) for the monitored device that is determined by adjusting a predetermined MTBF for the monitored device using the actual operating parameters that are measured while the monitored device is used for non-testing purposes in the field environment.

32.   (New) The system of claim 14 further comprising means for outputting a field-adjusted Mean Time Between Failures (MTBF) for the monitored device that is determined by adjusting a predetermined MTBF for the monitored device using the actual operating parameters that are measured while the monitored device is used for non-testing purposes in the field environment.

33. (New) The method of claim 27 further comprising outputting a field-adjusted Mean Time Between Failures (MTBF) for the device that is determined by adjusting a predetermined MTBF for the device using the actual operating parameters that are measured while the device is operated for non-testing purposes in the field environment.

34. (New) The method of claim 27 wherein measuring actual operating parameters includes monitoring a transistor utilization percentage for the device.

35. (New) The method of claim 27 wherein measuring actual operating parameters includes monitoring a bandwidth usage percentage for the device.

36. (New) The method of claim 27 wherein the reference failure rate for the device is a reciprocal of a reference MTBF for the device.